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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/979,582	03/14/2002	Lars Birke	TRW 2 0273	5033

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EXAMINER

CALEY, MICHAEL H

ART UNIT PAPER NUMBER

2882

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/979,582	BIRKE, LARS
	Examiner Michael H. Caley	Art Unit 2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 1-9 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 22 March 2000 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Liquid Crystal Display with Reflective Support Member and Heating Device

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haim (U.S. Patent No. 4,643,525) in view of Itoh et al. (U.S. Patent No. 4,623,222 “Itoh”).

Haim discloses a liquid crystal display comprising:

a liquid crystal cell functioning as a display (Figure 1 element 11);
a support configured as a reflector (Figure 1 element 20);
a heating device for the display (Figure 1 elements 21 and 23), the heating device including a metallic layer (Figure 1 element 23) applied directly onto the support.

Haim fails to disclose the liquid crystal display as having a housing on which the liquid crystal cell is disposed. Itoh, however, teaches a housing (Figure 1 element 2) on which a liquid

Art Unit: 2882

crystal cell (Figure 1 element 50) is disposed in a heated reflective display configured for use in an automobile.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a housing on which the crystal cell is disposed. As taught by Itoh, a housing would have been functional to protect the liquid crystal cell for use in a harsh environment such as in a car against shock and vibration and would have also been useful to encase and insulate the elements of the liquid crystal display. One would have been motivated to encase the liquid crystal cell in a housing using methods old and well known in the art to protect its sensitive elements in potentially dangerous environments and thus extend the life of the display.

Regarding claim 7, Haim fails to disclose the housing and the support as a single-piece component. Itoh, however, teaches the supporting reflective member (Figure 1 element 8) as connected to the housing (Figure 1 element 2) as a single-piece component using an L-bracket type structure (Figure 1). Such an arrangement is considered to be a “single-piece component” given that the multiple structures are fixedly connected such that the support and housing combination may be handled as a single-piece structure. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the housing and support for the reflector out of a single molded material as an engineering expediency to reduce the number of steps to construct the display device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the device disclosed by Haim such that the housing and the support equipped with the metallic layer are a single-piece component. Connecting the

Art Unit: 2882

supporting reflective member to the housing would have been an effective means to ensure the stability of the reflecting support member relative to the other members of the display. Using such a teaching, it would have been advantageous to connect all major structural components of the liquid crystal cell to the housing to ensure a constant relative position between all members of the device, creating a single-piece display component. Construction of such a single-piece display component would have been motivated by a desire to maintain a constant alignment of the optical elements and functionality of the device.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brandt et al. (U.S. Patent No. 6,128,053 "Brandt") in view of Itoh.

Brandt discloses a liquid crystal display comprising:

- a liquid crystal cell functioning as a display (Figure 1 element 8);
- a support configured as a reflector (Figure 1 elements 3, 11, and 21);
- a heating device for the display (Figure 1 element 9), the heating device including a metallic layer applied directly onto the support (Column 4 lines 48-56).

Brandt fails to disclose the liquid crystal display as having a housing on which the liquid crystal cell is disposed. Itoh, however, teaches a housing (Figure 1 element 2) on which a liquid crystal cell (Figure 1 element 50) is disposed in a heated reflective display configured for use in an automobile.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a housing on which the crystal cell is disposed. As taught by Itoh, a housing would have been functional to protect the liquid crystal cell for use in a harsh

Art Unit: 2882

environment such as in a car against shock and vibration and would have also been useful to encase and insulate the elements of the liquid crystal display. One would have been motivated to encase the liquid crystal cell in a housing using methods old and well known in the art to protect its sensitive elements in potentially dangerous environments and thus extend the life of the display.

Claims 2-6, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandt in view of Itoh and in further view of Ostwald (German Patent No. 33 28 339).

Regarding claims 2, 3, 5, and 9, Brandt fails to disclose the support as plastic and a metallic layer as a bonding layer applied directly onto the support and a galvanic coating applied onto the bonding layer as proposed. Ostwald, however, teaches a plastic support with a metallic layer as a bonding layer applied directly onto the support and a galvanic coating applied onto the bonding layer for use as a heating layer in which the support consists of metal-coatable and metal non-coatable plastic, and the metal-coatable plastic is in part chemically metallized (abstract, use/advantage).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a substrate and reflective/heating layer such as taught by Ostwald as a substitute layer in the device disclosed by Brandt. Such a substitution would have been motivated by a desire to alter the reflective and transmissive properties of the layer and also to change the manufacturing process in building the device in order to achieve the expected results of using such materials for the reflective and heating layer as are old and well known in the art. Ostwald teaches a layer and method of constructing the layer that renders a support functionally

equivalent to the support disclosed by Brandt and proposed by Applicant. Exchanging one type of known reflective/heating layer for another reflective/heating layer designed for equivalent applications would have been an obvious engineering expediency to one of ordinary skill in order to obtain the expected results of such a substitute layer. Particularly to claim 3, the steps of deep-drawing and rear-spraying of the foil are considered as not further limiting the claim. Such limitations are regarded as related to a product-by-process in which only the limitations to the structure implied by the steps is given weight (MPEP 2113). Ostwald discloses the structural limitations of a metallic layer as a foil coated with a galvanic bonding layer.

Regarding claim 4, Brandt and Ostwald fail to disclose the coating as copper. The Examiner takes Official notice however that copper is a material commonly used in the art as a electrically conductive material used as a heater in analogous applications of liquid crystal display devices.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used copper as the galvanic metal coating over Sn or Pa as taught by Brandt. One would have been motivated to substitute copper as the galvanic conductive coating according to an engineering expediency to alter the resistive and bonding properties of the metal over another. One of ordinary skill in the art would have substituted the material in order to obtain the expected results of using such a layer as are old and well known in the art of heating devices for liquid crystal displays.

Regarding claim 6, Brandt discloses contact pins injected into the support contacting the metallic layer (Figure 4 element 36) and conductor plates connecting metal regions (Figure 4 element 37; Column 6 lines 4-16).

Regarding claim 8, the steps of irradiating the plastic support with a short-wave ultra-violet light and immersing it in a watery solution are given no patentable weight due to their status as method steps in a product-by-process type claim (MPEP 2113).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,907,859 to Takada et al. as an alternative liquid crystal display and heating device embodiment.

U.S. Patent No. 5,886,763 to Wolkowicz et al. as an alternative liquid crystal display and heating device embodiment.

U.S. Patent No. 5,680,191 to Voisin et al. as an alternative liquid crystal display and heating device embodiment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (703) 305-7913. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Art Unit: 2882

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mhc

mhc

May 23, 2003

[Signature]
ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800